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ABSTRACT

The Molokai Farm Project at Maui Community College grew out of a grant for a Youth Agricultural Entrepreneurship Demonstration Program. The program, which can lead either to an associate degree or to a certification of completion for any number of smaller units of course work, is designed to develop students' managerial proficiency and the technical skills needed to operate a farm successfully. Other activities completed during the project include development of a truck crop program to conduct variety trials and provide a cash flow, implementation of a certified ornamental plants program, design and establishment of a fruit and nut orchard, provision of training to families in the area of operating a family-run agricultural enterprise, and establishment of a training site for program graduates to farm. In addition, project staff have worked in cooperation with the local extension service to foster agriculture on the island of Molokai and have managed to find several marketing outlets for crops produced under the auspices of the project. A table showing Molokai Farm produce production for fiscal 1982-1983 and an external evaluation of the project are appended. (MN)

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MOLOKAI FARM PROJECT

AN AGRICULTURAL TRAININC PROGRAM

OF THE

MAUI COMMUNITY C)LLEGE, UNIVERSITY OF HAWAII

REPORT FO[FISCAL YEAR 1982-83

DEPARTMENT OF AGRICULTURE
STATE OF HAWAII

OCTOBER 1983

CE 041330

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BACKGROUND AND HISTORY OF MOLOKAI FARM

In July 1979 the people of Molokai received their first comprehensive post-secondary training program in agriculture in the form of the Molokai Institute of Agriculture (MIA). The MIA was the outgrowth of a $1.2 million grant awarded to Lokahi Pacific for a Youth Agricultural Entrepreneurship Demonstration Program (YAEDP) by the U.S. Department of Agriculture. The 2-year grant, which expired on December 31, 1981, fostered two primary objectives: (a) to demonstrate the feasibility of converting under-utilized tillable land into a productive resource, thereby creating an economic base for future employment; and (b) to direct the untapped resource of "high risk" agriculturally-oriented youth toward entrepreneurial opportunities in agriculturally-related fields.

The objectives of the program were very ambitious for accomplishing results in so short a time. The first nine months of the project were necessary to procure a lease from Maui County for 60 acres of agricultural park land in Hoolehua, clear the land for production, obtain water and electricity, and recruit students. Towards the end of the project expiration, the Federal Government informed the MIA Board of Directors of its decision not to continue grant support beyond the December 31, 1981 expiration date.

Since Maui Community College (MCC) has the responsibility of providing post-secondary education to Molokai and all islands in the County of Maui, the Board of Directors of MIA and representatives of the Molokai community approached Maui Community College to expand its current agricultural program to include the Molokai facility and program. In response to this request, Provost Alma Cooper convened the MCC Task Force on Agricultural Training for Molokai. The Task Force was comprised of representatives from the State and county governments, industry, community and the College and met at the MIA facility on November 16 and 17, 1981. The primary purpose of this Task Force was to assess all relevant and available information related to this project and to evaluate the continuing need for agricultural training on Molokai. Conclusions formulated at that meeting indicated:

(a) Manpower and training demands in fact do support the need on Molokai for a systematic program of post-secondary agricultural training.

(b) The MIA facility, with certain operational and training modifications, would serve very well as a training site.

As a result of the Task Force report, Provost Cooper in a December 1, 1981 letter of intent informed Mr. James Scanlon, Program Officer for the Farmers Home Administration of the U.S. Department of Agriculture, that the College "was prepared to consider a genuine commitment to supporting an agriculture program on Molokai," but that greater time was needed to study the issue.

Shortly thereafter, Mr. Scanlon completed a site visitation to the MIA facility and to the MCC campus. Based on MCC commitment to take over and continue the operations of a rural farm training program on Molokai, he was prepared to transfer to MCC the MIA property and equipment valued in excess of $300,000. After dialogues with community and University officials and faculty, Provost Cooper apprised Mr. Scanlon in a December 28, 1981 memorandum of MCC's intention to continue an agricultural training program on Molokai.

The 1982 Legislature accommodated this commitment by appropriating $95,000 to the Department of Agriculture (DOA) in the Supplemental Appropriations Act of 1982. DOA in turn contracted with MCC to continue this project, renamed MOLOKAI FARM, during the fiscal year ending June 30, 1983. The mid-year and final reports from MCC in fulfillment of this contract are submitted herewith.

(Operation of the Farm during FY 1984 is being funded through the Governor's Agriculture Coordinating Committee (GACC). Funding through DOA and GACC was an interim measure until MCC could budget the necessary funds within the University of Hawaii system. We understand that funds for this program for FY 1985 are included in the University's budget request.)

Department of Agriculture
State of Hawaii

October 1983

February 1983

MOLOKAI FARM PROGRESS REPORT 1982-83

The following information represents a mid-year progress report and a projection of activities to June 30, 1983. This report is organized in the format submitted to the Department of Agriculture in July 1982.

Goals and Objectives 1982-83

Considerable progress has been made towards meeting the following objectives identified in our initial submission. The status of each has been reiterated below.

Goal: Develop students' managerial proficiency and technical skills to operate a farm successfully. To attain this goal:

1. Offer courses leading to Certificate of Achievement and the Associate of Science.

   The following courses were scheduled and offered in the Fall and Spring semesters during the current academic year. The number of agriculture program majors and enrollments for each agriculture course are reflected below.

   Fall 1982--24 Individuals Enrolled (Unduplicated)

AG 22-Soils Technology	16 students
AG 43-Plant Science	18 students
AG 55-Veg Crop Production I	16 students

   Support Courses(offered for agriculture majors as well as other students included English, Cooperative Education, and other general education courses).

   Spring 1983--25 Individuals Enrolled (Unduplicated)

AG 35-Irrigation and Drainage	16 students
AG 41-Plant Disease & Pest Control	24 students
AG 56-Veg Crop Production II	12 students
Welding	21 students

   Support Courses(offered for agriculture majors as well as other students included Vocational Math, Cooperative Education, and other general education courses).

2. Offer Certificate of Completion for smaller units of course work.

   A proposal for a "Certificate of Completion" in Vegetable Crop Production was submitted to the MCC Curriculum Committee and after receiving the approval from the Faculty Senate and administration will be available to students in Fall 1983.

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It is estimated that at least 10 students currently enrolled in the program will qualify for this Certificate of Completion by the end of the Fall 1983 semester.

3. Develop a Truck Crop Program to conduct variety trials and provide a cash flow.

All the crops grown at the MCC Molokai Farm were variety trials.

First Semester (Fall 1982)

Agriculture 55, Vegetable Crop Production I, was offered in the Fall semester. Students were given the opportunity to learn various crops from planting, growing, harvesting and marketing. These crops were sold on the local market because of the small acreages planted and the experimentation involved. The modest revenues which were deposited in the revolving account resulted from poor productivity with some varieties and beginning students' inexperience. For example, many of the students had not farmed with tractors and other farm equipment before.

Student Projects

1) Radish - 2 rows, 200 feet long

2) Eggplant - 1 row, 200 feet long

3) Broccoli - 9 rows, from three successive plantings

4) Cauliflower - 6 rows, just finished harvesting

5) Beans - 4 rows, pole variety grown was not very productive; cucumbers to be grown on existing netting

6) Lettuce - three varieties of lettuce were grown by an Ag 55 student to determine whether Molokai could grow lettuce for local consumption thereby reducing or eliminating imports. The varieties grown were:

Montello - a fast-growing but smaller head lettuce
MESA 659 - did very well with good yields; most people preferred this variety
Anuenue - good quality but did not market well due to preference for head lettuce

This information has been shared with the UH Extension Agents, Glenn Teves and Alton Arakaki. It was previously thought that Molokai could not grow lettuce because of the wind, red dirt, and dust.

7) Peppers - students grew 26 pepper varieties as part of their Vegetable Crop Production I laboratory work in cooperation with the UH Extension Agents on Molokai. Keystone was used as a standard with which 25 other varieties were compared. Keystone has a lot of branching and causes the early peppers to get caught and become deformed. The objectives of this project were to determine:

(1) Branching habit
(2) Disease resistance
(3) Flowering habit
(4) Yield

Varieties grown:

(1) Keystone
(2) Better Belle
(3) Green Belle
(4) World Beater
(5) Citadel
(6) Pip
(7) Espadon
(8) Cadice
(9) P 705
(10) F. Niagara Giant
(11) Argo
(12) E. Canada Bell
(13) Lincoln Bell
(14) Liberty Bell
(15) Burpee Fordhook
(16) Burpeetasty Hybrid
(17) Zippy Hybrid
(18) Lady Bell
(19) 6711 Hybelle
(20) Bell Boy
(21) Anna Bell
(22) Giant Ace
(23) VR-2
(24) Big Bertha
(25) Vaughn's Patio Bell
(26) NVH 2050

Results thus far indicate that number (21), Anna Bell, has good size, high yield, and is disease-resistant. Agent Teves is using this information in his work with 50 Hawaiian Homestead farmers.

8) Tomatoes - weeds were a problem after the vines grew. mulching is being tried with the next crop.

9) Ginger - 200 lbs. were planted in late June on about 1/10th acre. The crop was harvested in February 1983 and will be used as seed pieces for planting in March 1983. The ground will have dolomite and gypsum added first, then fumigated, and followed by fertilizer incorporation, and planting. To our knowledge, this is the first time ginger was grown on Molokai as a crop for its commercial potential. Recently some Hilo farmers acquired a lot in the Ag Park and are now preparing to plant ginger. There is much enthusiasm among our students regarding this crop.

Second Semester--(Spring 1983) Projected. Some crops are already in the ground already.

1. Sweet Corn--3 acres
2. Bulb Onions--.7 acres
3. Bell Peppers--4 acres
4. Papayas

5. Ginger--plant seed pieces
6. Watermelon--.5 acres

4. Develop a Certified Ornamental Plants Program

Planning the design for the greenhouse improvements are completed. The greenhouse will be renovated this Spring 1983 and will become productive by fall 1983. The greenhouse is not certified and requires extensive repair before any specimens are grown. Students grew about 50 poinsettia plants as part of their lab work in Ag 43, Plant Science. The plants were not very good due to inadequate light and the lack of liquid feed.

A field crop of Dracaena massangeana was planned to be grown for "canes". This has been deferred until next year due to the time that is now required to grow the vegetable crops, renovate the facilities, repair equipment and irrigation breakdowns, meet our revenue projections to cover expenses and project goals, and to provide the primary instructional and training activities which is to teach agriculture.

5. Develop Fruit and Nut Orchard, 1983-84

Students have grafted 30 citrus and 30 avocado plants as part of the Ag 43 Plant Science lab activity. There was a 50% "take" or success rate; this is considered good because none of the students had ever grafted before.

500 Troyer seedlings are being grown for Summer and Fall 1983 grafting.

There is a Hawaiian Homestead student (Cathy Kahae) who is interested in growing fruit for local consumption. Several students want to sell grafted plants to markets on Maui and Oahu. An Ag Park tenant is interested in grafting citrus on a commercial basis. A small orchard of Mango, citrus, macadamia, and avocado is planned for 1983-84. This orchard will serve as "mother stock" for grafting materials and training in tree care. One acre of papayas (Waimanalo low-bearing) will be planted in March 1983 to provide instruction and generate a cash flow.

6. Training Site for Program Graduates to Farm--The Enterprise System

While land is available at the MCC Farm, many of the graduates have family land for farming. Some of the present students who do not have land are farming on a small scale commercial basis at the farm to gain experience as an entrepreneur. Discussions with the UH-Hilo College of Agriculture, the College of Tropical Agriculture, UH-Foundation, and the University administration about the entrepreneurial project proposal have taken place and

procedures have been drafted and are currently being reviewed.

In this Enterprise System, it is proposed that the student(s) will enroll for Ag 58, Vegetable Crop Production III. The course will teach the student to prepare the land; plant and care for the crop, harvest, and market the crop. The student will acquire a General Excise License and will keep production and income records. Revenue generated will be deposited in a UH Foundation account specifically designated for these entrepreneurial projects. The UH Foundation will pay the 4% State Tax on the monies deposited and a part of the revenue will be set aside in the Foundation to pay for operating expenses. The profit will be divided between the student and the MCC Farm:

1. Student entrepreneur.....2/3
2. Farm.....1/3

Monies that remain in the Foundation fund will be used for future projects and undertakings.

The Enterprise System is being modeled after the very successful one at Cal Poly. Great interest in this project has been shown by the Maui, Molokai, and Hilo College agriculture faculty.

7. Training of Families

It is known that a family agriculture enterprise has a better chance for success. For this reason families are encouraged to enroll in the agriculture program. The College has worked very closely with the Department of Hawaiian Homes in providing agriculture training to homesteaders and to those applying for homestead land. The Department of Hawaiian Homes desires to put homestead land into production. Agriculture knowledge and training are important considerations for Hawaiian Homes when considering and making homestead land awards. The technical training at the on-site facility (MCC Molokai Farm) is helping that department reach its goal.

Families participating in the program include the following:

Keanini family: Arthur has 40 acres of homestead land. James and his sons, Lincoln and Silas, and daughter-in-law, Williamette, have 40 acres.

Kahae family: Martin and Cathy have 35 acres of homestead land and a house lot.

Student Access to Land	Fall 1982	Fall 1983
Number that have homestead land between 5-40 acres:	13	14
Number that own about 5 acres:	1	1
Number that has leased an Ag Park lot:		1
Number that plan to acquire homestead or private land:	10	9

8. Foster agriculture on Molokai in cooperation with the UH Extension Service, Alu Like, etc.

The Extension Agents visit the MCC Molokai Farm about once every other week. They come more often when help is needed to solve crop problems. Alton Arakaki has been helpful with disease problems. Glen Teves is helping with Ag 41 Plant Disease and Pest Control by being a guest speaker in three labs. Both agents use variety trial information to help their clients.

Alu Like is very supportive of the program. This agency provides financial support to about eight students who meet their criteria. Alu Like counselors provide counselling and recruitment assistance, as well.

Department of Hawaiian Homes and Maui Community College work very closely in the recruitment of students and in meeting present and future homestead farmers' educational needs. As indicated above, over 50% of our students have Hawaiian Homes land and others are applicants for homestead lands.

9. Marketing

The Farm exports much of its crops to Star Produce and Armstrong on Oahu. It sells to Molokai markets such as: Friendly Market, Molokai Buyers, Pau Hana Inn, Midnight Inn, Hotel Molokai, Wave Crest, etc.

Students have been given training in the need for good grading and proper handling of produce to meet market requirements. Education goes on continuously.

It is difficult to work with "off island" markets because the farmer is at the mercy of the wholesaler. The shipment is always FOB Oahu. The farm would like to cultivate more local markets because there is greater control of marketing and pricing. Sweet corn is being planted this semester, 10 rows at 2½ week intervals, for local sale. There is such a demand for this product that customers cannot wait for the corn to be placed on the store shelf. However, Oahu sales bring in bigger money because of the larger volume.

The Young Brothers Barge comes to Molokai twice a week on Mondays and Wednesdays. Harvesting occurs on those two days for export.

Local sales have brought in a small income but is expected to improve with sweet corn this semester.

The new tomato, vegetable, and papaya boxes along with a MCC Molokai Farm stamp improves the appearance of the product and confidence in the grower by the wholesaler.

10. Income as of December 1982 and projections to June 1983.

December, 1982	
1. Tomatoes and peppers	$977.00
2. Lettuce	430.00
3. Papayas	1,000.00
	$2,407.00
June 30, 1983 (Projected)	
1. Sweet Corn	$1,800.00
2. Bulb Onion	2,500.00
3. Bell Peppers	8,000.00
4. Tomatoes	1,200.00
5. Papayas	2,400.00
	$15,900.00

Year Total (revised estimate): $18,307

The revised estimate has been required due to the following problems occurring over the last semester:

a. Many irrigation breakdowns. There were three major breaks in the 6" PVC incoming line. Soil Conservation and the Department of Land and Natural Resources water personnel have been called for assistance. The pressure regulator is suspect, the design of the system was bad, and the workmanship during the installation may have not been the best. There is a "hammer lock" that creates a persistent vibration that causes pipes to crack, leak, and blow apart. We are in the process of redesigning the entire incoming service and possibly changing to galvanized pipe instead.

The farm was designed to be irrigated by drip and sprinkler irrigation. However, drip, sprinkler, and furrow irrigation are used. Portable PVC for field sprinkler irrigation cracks easily. Aluminum pipe would have been better. One man could irrigate the entire farm with aluminum pipe. We are looking into purchasing aluminum pipe.

There are many leaky gate valves, surface PVC laterals that break easily if run over by vehicles and prevent tractor cultivation of weeds. There are grotesque PVC hook-ups that rise above the ground approximately three feet that shake in the wind and are easily struck by vehicles. These pipes crack underground at the six inch main line. Repair requires excavation and shut down of the system, and much

time. Laterals are 2½" in size. The parts are not stocked locally and need to be brought in from Oahu.

b. Equipment in poor shape. Three of the four motor vehicles were not running at the time Maui Community College took over the facility and program. The one that was in operation needed new tires and a radiator. The big flatbed truck and one van are still not running. The small pick-up truck has had an engine overhaul job and is still not reliable.

The White tractor was down for almost two months waiting for a seal from the Fiat factory in Italy.

We are buying more tool bars so we will not need to spend a half hour each time to rearrange implements for different farm tasks.

c. Educational Training versus income production. Students are just beginning their agriculture training and the time required for education and generation of income to meet budgetary requirements may not always be compatible. Our primary purpose is to train people in agriculture and the production of crops must be kept in line with our educational goals.

d. The variety trials that ~~was~~ were conducted provided much good information for the Molokai farmers. Farmers learned about the varieties that were not very productive.

e. The greenhouse is not productive yet. Renovation is pending and completion is projected for summer 1983. The facility will be productive in Fall 1983.

f. The papaya orchard is not as productive as we had expected. Of the two acres of papayas, one acre is of the Sunrise variety. This variety has a very good taste but has a low shelf life. One acre is of the Waimanalo variety. This variety is preferred by the markets and is a good shipper. Approximately one half of the trees are female and the fruit is not saleable to markets except for juice. The price for the female papaya does not justify harvesting and shipping.

The farm receives 45¢ a pound for the Waimanalo variety and 25¢ a pound for the Sunrise variety. Star Produce averages this out to 35¢ a pound and 15¢ a pound for off grades.

The Molokai Farm is preparing the ground to plant one acre of Waimanalo papaya plants. The ground is tilled and will be limed in February 1983 and planted soon after. No female trees will be kept.

11. "Firsts" for Molokai because of the MCC Molokai Farm

a. There is now an ongoing agriculture training site for the local people as opposed to an occasional class, workshop, or summer project offered in previous years. People have access to a laboratory site with crops and to technical assistance. The less mobile farmers and married residents or individuals with dependents can continue to live on Molokai while they go to school. This access to the opportunity for higher education in one's own community is within the mission of the community college.

b. The lettuce variety trials resulted in recommendations for local farmers for the variety appropriate to grow for local markets.

c. The bell pepper variety trials resulted in recommendations for the local farmers for the variety appropriate to grow for local markets and Oahu.

d. The eating ginger grown and harvested shows there is a potential for this crop on a commercial basis.

e. The citrus root stock grown for grafting and export to Oahu and Maui. There is much student enthusiasm.

f. The enterprise system for developing agriculture entrepreneurs. Maui, Molokai, and Hilo College agriculture students will benefit from MCC's leadership in this particular program.

g. There has been organized field trips for the local people to Mahana Nursery, Hawaiian Tropical Plants, sweet potato farms, Harry Purdy's macadamia and lei flower farm, Leonard Peter's Farm, etc. This has provided students with the opportunity to see that farming is possible on Molokai and the experiences have stimulated the kind of attitude and drive needed to be successful.

h. The MCC Molokai Farm is the only training facility in the State at this time that has, as a primary goal, the training and retraining of farmers and the facility provides the acreage and machinery for realistic technical applications in agriculture. MCC plans to make this facility available to interested persons in the entire State. Manoa and Hilo bound agriculture students may come to Molokai for their hands-on-training experiences to complement their academic studies.

12. Staff

The strengths of the program lie in its trained and enthusiastic instructors who provide current information along with extensive "hands on" farming experiences.

The MCC Molokai Farm has a hard working full-time instructor-coordinator, Mr. Launnie Ginn. He is a Cal Poly graduate who works seven days a week at the farm. He has vegetable farming experience and the necessary technical knowledge. He is well received by the students, farmers, and community agencies. He is responsible for most of the excellent results of the Farm. He is mechanically inclined and able to do most of the equipment repairs. He is a good model of a farmer.

Ernest Rezents is the overall program coordinator (Maui and Molokai) and has taught a course on Molokai. He is responsible for the administrative aspects of the Farm. He is working on the greenhouse renovation and has met with Alu Like, Lokahi Pacific, Hawaiian Homes, etc. in developing the agriculture program.

Both instructors, along with those teaching support courses, are enthusiastic and pleased with the results of Maui Community College's program.

The filling of the Account Clerk position i February 1983 will improve follow-up on sales, mailing of invoices, and collection of money. It has been very difficult to do some of these things along with the many other demanding operational tasks.

Summary:

There has been substantial progress made towards meeting our educational and overall program objectives. While the level of revenues generated in the first semester is below our projections, the crops projected to be harvested in the Spring are anticipated to contribute towards the total revised estimate.

Existing farmers now have a complete program of instruction available to them. Married students or students with dependents can remain at home on their land and enroll in the agriculture program. Of the 16 Molokai students who came to the Maui campus in 1981-82 only one was married and none were farmers. Of the students enrolled at the MCC Molokai Farm about 10 are existing farmers and about 12 are married with families.

An end of the year project report will also be prepared and submitted to the Department of Agriculture and will include a separate external evaluation.

August 4, 1983

MCC MOLOKAI FARM FINAL REPORT FOR 1982-83

The following information represents a final report of activities to June 30, 1983. This report is organized in the format submitted to the Department of Agriculture in July 1982.

Goals and Objectives 1982-83

The College considers the first year of operation of its Molokai Farm a success. Some of the "Goals and Objectives" established in the 1982 proposal to the Department of Agriculture have been met while others will require additional time and effort to measure up to the College's expectations.

Each of the "Goals and Objectives" is listed below followed by a summary of activities undertaken during the year.

1. Offer courses leading to Certificate of Achievement and the Associate of Science Degree.

   The following courses were scheduled and offered in the Fall and Spring semesters during the 1982-83 academic year. The number of agriculture program majors and enrollments for each agriculture course are reflected below.

   Fall 1982--24 Individuals Enrolled (Unduplicated)

Ag 22-Soils Technology	16 students
Ag 43-Plant Science	18 students
Ag 55-Veg Crop Production I	16 students

Support courses (offered for agriculture majors as well as other students) included English, Cooperative Education, and other general education courses such as: Political Science, Anthropology, etc.

   Spring 1983--25 Individuals Enrolled (Unduplicated)

Ag 35-Irrigation and Drainage	16 students
Ag 41-Plant Disease and Pest Control	24 students
Ag 56-Veg Crop Production II	12 students
Welding 19	21 students

   Support courses (offered for agriculture majors as well as other students) included Vocational Math, Cooperative Education, and other general education courses such as: Psychology, Speech, etc.

Effective in the Fall 1983 semester, the agriculture courses have been renumbered to above 100, and some course titles and descriptions have been modified. Two new courses will be offered: Ag 232 Farm Tractor and Equipment Operation and Ag 290 Farm Enterprise.

Course articulation has been accomplished with UH-Hilo College of Agriculture. Articulation with UH-Manoa, College of Tropical Agriculture and Human Resourdces is in progress. This articulation with UH-Hilo will permit MCC agriculture students to have their course work completed on Molokai and/or Maui accepted by UH-Hilo's College of Agriculture towards a B.S. degree.

Providing adequate financial support is available for staffing, supplies, equipment, travel, etc. and there is continued community interest, the College plans to continue a program of courses that will enable students to earn a Certificate of Achievement or an Associate in Science degree in Vegetable Management. Students will also learn the basics in greenhouse work and fruit and nut production.

2. Offer Certificate of Completion for smaller units of course work.

   A Certificate of Completion in Vegetable Crop Production will be available in Fall 1983 to students successfully completing the following four courses:

   Ag 151 Vegetable Crop Production I (4)
   Ag 251 Vegetable Crop Production II (4)
   Ag 232 Farm Tractor and Equipment Operation (1)
   Ag 290 Farm Enterprise (1)

3. Develop a Truck Crop Program to conduct variety trials and provide a cash flow.

   All the crops grown at the MCC Molokai Farm were for variety evaluation because of the "newness" of the program and personnel to the area.

   Papayas: Two acres were in production in July 1982 but no fruit was being marketed. Selling papayas during the winter was good because of demand. Star Produce was delinquent in paying its bills (see Appendix A) so the farm switched to a more reliable firm. Production is presently back up but the summer market is flooded again. One acre of Waimanalo papaya was planted in May 1983 along with a row of Puna and Kapoho varieties for evaluation. One acre of the older trees will be eliminated this summer due to their age and height.

Bellpeppers: One-fourth acre of an old pepper crop was in the ground in July 1982. A successive planting program, 1/2 acre every two months, was employed to provide 1 to 1 1/2 acres in production continuously. Keystone is the standard variety although a test with 26 other varieties was conducted. One variety, Anna Belle, had a good yield, seemed to have good branching and some disease resistance but requires further evaluation. The peppers were sold locally and were also shipped to Oahu when production was high.

Sweet Corn: A one-eighth acre successive planting program was started in September of Super Sweet #9 for sale to local markets. The corn crop was grown as part of the Vegetable Crop Production II class activity during the Spring semester. Students experienced planting to harvest on a continual basis. Other varieties of sweet corn will be planted next year--Super Sweet # 10, Golden Cross Bantam, and Golden Jubilee.

Tomato: Successive one-half acre plantings were started in Fall 1982. Major problems caused by wet weather, blight, mites, and weeds occurred. Planting was stopped after the second increment until the weather improved. A one-half acre was planted in February with plastic mulch paper for better weed control. Improved weather and better weed and pest control produced a better yield. Healani, the variety planted, has a good initial fruit set but we experienced a rapid production drop. N 52 was tried but gave poor results.

Ginger: One-eighth acre of ginger was in the ground in July 1982. It was harvested in February and most of it was used for seed for a one-half acre planting in March 1983. Two hundred and fifty pounds were sold but the market was flooded and the price was down. All the other Hawaii farmers were in the same predicament. Next year's crop will be earlier and hopefully the market will be better. We have made an initial contact for selling the crop on the mainland.

Bulb Onion: One-half acre of yellow granex was planted in December. The quality and yield were good but the market was flooded at the time of harvest. The crop was sold to local vendors. An earlier planting is planned for next year to "hit" a better market.

Watermelon: One-half acre of Charleston Grey was in the ground in July 1982. Disease, marketing, and transportation problems were encountered. One-half acre of Crimson Sweet was planted in March 1983. The yield, quality, and markets were very good. If this crop is planted next year we will again plant early to "hit" a good market.

Lettuce: Various varieties of lettuce were tried for winter production (Mesa 659, Montello, Anuenue). Successive plantings of one-eighth acre each week were planted. Mesa 659 produced good results and sold well locally. This crop was grown as a student project.

Other Crops: Minor crops were grown for experimentation or as student projects with variable results.

Four one-eighth acre plantings of carrots gave a good yield of high quality roots. Nematode damage was evident.

Two one-eighth acre plantings of Broccoli (De Cicco) produced a fair yield. The crop was sold locally.

Two one-eighth acre plantings of Cauliflower (Puakea) produced a good yield of quality heads. The crop was marketed on Oahu.

One-fourth acre of Zucchini (Black Zucchini) was planted. Many pest problems resulted in no yield.

One-eighth acre of Radish was planted. The radish developed a cracking problem and were of poor quality.

One-eighth acre of polebeans (Manoa Wonder) was planted. The crop had a mildew problem and was harvested at a time when the price was depressed.

One-eighth acre of Diakon produced a good yield but of very poor quality.

One-eighth acre of Eggplant was planted. Poor quality of fruit resulted from wind damage.

One row of Irish potatoes was planted. The yield was low but the tubers were of good quality.

Poinsettias were grown in the greenhouse as a class project. The quality was fair due to reduced light (bad roof) and low nutrition (no liquid feed program yet).

See APPENDIX A for a summary of crops, acreage, and income generated.

4. Develop a Certified Ornamental Plant Program.

The greenhouse upgrading has not been on schedule due to a factory delay in manufacturing the type of filon ordered. No problem had been anticipated when the order was placed and delivery was expected in June 1983. The lumber and hollow tile are on Molokai and will be used when the structural material arrives from the mainland. Delivery is expected in middle to late August. This will defer our planned activities for several months.

5. Develop a Fruit and Nut Program.

A small orchard of avocado, mango, citrus, and macadamia is projected for 1983-84. There are about 300 citrus seedlings growing for grafting by Fall 1983 classes. More seeds will be planted for a grafted citrus project on a continuous basis.

The grafted citrus and avocadoes from the Fall class in Plant Science died during the 1983 summer from lack of attention. A better system will be implemented when the greenhouse is completed because plans include an automatic irrigation system with injection of fertilizers.

6. Training Site for Program Graduates to Farm.

Few students have taken advantage of farming at the site for a profit. We expect more students to farm in Fall 1983 under Ag 290 Farm Enterprise. These students will have had a year of classes and be better able to do independent work. The enterprise contract is still being reviewed by University personnel.

In this Enterprise System, it is proposed that the student(s) enroll for Ag 290, Farm Enterprise. Students will prepare the land; plant and care for the crops, harvest, and market the crop. The student will acquire a General Excise License and will keep production and income records. Revenue generated will be deposited in a UH Foundation account specifically designated for these entrepreneurial projects. The UH Foundation will pay the 4% State Tax on the monies deposited and a part of the revenue will be set aside in the Foundation to pay for operating expenses. The profit will be divided between the student and the MCC Farm:

1. Student entrepreneur 2/3
2. Farm 1/3

Monies that remain in the Foundation fund will be used for future projects and undertakings.

The Enterprise System is being modeled after the very successful one at Cal Poly. Great interest in this project has been shown by the Maui, Molokai, and Hilo College agriculture faculty.

7. Training of Families.

In spite of our newspaper and "mass mailing" publicity efforts and person to person contacts, it has been difficult to enroll families for courses. The Keanini family was enrolled in Fall 1982 and the Kahae family in Spring 1983. We have had about ten farmers enroll in courses for knowledge and skill upgrading and about twelve of our students are married and have families.

Slightly more than 50% of our 25 students have Hawaiian Homestead land and the remaining students either have Molokai Agriculture Park land, are in farming for others, or plan to acquire private or Hawaiian Homes land for farming.

8. Foster agriculture on Molokai in cooperation with the UH Extension Service, Alu Like, etc.

The Extension Agents visit the MCC Molokai Farm about once every other week. They come more often when help is needed to solve crop problems. Both Alton Arakaki and Glenn Teves have participated in the Molokai Farm program. The Molokai Farm staff participated in the July 1983 Junior Chamber of Commerce Molokai Carnival. People brought soil to have its pH determined and appropriate soil modifications recommended if necessary. A plant disease clinic was available at the carnival but no one took advantage of it.

9. External Body Evaluate Program.

See Appendix "B" for a copy of the evaluation conducted by Mr. Dan Shigeta, Maui County Administrator of University Extension Service, Mr. Glenn Teves, Molokai based Hawaiian Homes funded University Extension agent, and Mr. Dave Curtis, a Molokai Farmer.

10. Summary.

When the College assumed the Farm in July 1982, there was approximately one acre of vegetables and two acres of papayas in the ground. The first six months were spent trying to get things set-up and organized. It took about seven months before staffing was completed. Markets were established for our produce both locally and on Oahu. The tractors, vehicles, and equipment had been badly abused. Much time was spent on repairs including major engine work, transmission, and replacing bearings. Many minor repairs were necessary that consumed many hours of time.

The farm was not set-up well for row crops because too much time was spent setting-up equipment for operations such as row making, cultivating, and fertilizing. The irrigation system needed extensive work and repairs. There were major pipe blow outs, leaks, broken risers and sub-mains. The design was very poor. We have repaired everything and made the system functional. Now we are in the process of revamping the system by replacing above ground mains with steel and "streamlining" the set-up, replacing risers with aluminum, implementing furrow irrigation, and improving the drip system.

The area around the buildings has been landscaped and secured with chain link fencing. Most of the fields have had Dolomite and gypsum incorporated this Spring. Soil pH now measures about 6.8 and the calcium content is higher. Soil tests about a year ago indicated a pH of 5.8 and 6.4 and calcium to be less than 300 lbs. per acre. Soil tests will be conducted to measure present soil fertility.

In addition to all these repairs and improvements the staff has been able to put about 15 acres of land into production. With time and more improvements, the MCC Molokai Farm will be a highly organized and efficiently run row crop farm for the education, training, and upgrading of farmers, potential farmers, and persons involved in other aspects of agriculture. Students will also be trained in basic greenhouse work for ornamentals and fruit tree production.

Funding for 1983-84 has been a problem. Two separate appropriations were made ($30,000 and $50,000) by the 1983 legislature. The College was notified on July 12, 1983 that $30,000 is available for the program. No word regarding the $50,000 Grants-in-Aid was received until August 2, 1983 (awarded $48,150). Because this money was not received by July 1, 1983, the College had to place the two agriculture technicians and account clerk on leave without pay. The agriculture technicians will be called back to work as soon as the paperwork is completed. The reappointment of the acount clerk will take longer because of civil service regulations. The College is considering including the Molokai Farm into its Supplemental Budget request for 1984-85. If approved, there will then be a continuity of staffing and training. Presently, the instructor is operating the Farm with three students and two Summer Youth mployment participants.

Agriculture 290, Farm Enterprise, is expected to be in operation all year long for student participation and motivation. This has been a frustrating experience because it has taken nearly a year for the Enterprise Contract to be scrutinized by the University and it is still far from being finalized. There is much student interest in participating.

It has taken over a year to obtain a lease to the Agriculture Park lot number 11 and this is still in progress. It required a year of time consuming procedures to finalize registration of the motor vehicles in the College's name.

According to Computer Report 1004F, dated 7/07/83, $94,135.00 is the total amount expended and encumbered of the $95,000 Department of Agriculture grant to Maui Community College for 1982-83.

APPENDIX A

MCC-Molokai Farm
P. O. Box 291
Hoolehua, HI 96729

AGRICULTURE PRODUCE PRODUCTION
FISCAL YEAR 1982-1983

Description	Acreage Planted	Pounds	Price Range	Income	Outstanding Income
Bellpeppers	3	5,101	$ .90 - .55	$ 1,158.71	
Carrots	3/4	1,849	.25 - .35	647.38	
Corn	2½	2,073	1.20 - 2.00 doz.	1,543.07	
Onions	½	2,670 50# @	12.00 - 15.00 bag	759.98	
Papaya #1	3	16,081.52	.30 - .55	2,213.93	
Papaya off-grade		3,053	.15 - .25		
Tomato	1½	3,880	.35 - .55	714.98	
Watermelon	1	5,400	.25	417.48	
Broccoli	¼	125	.75	93.75	
Cauliflower	¼	469	.35 - .45	187.60	
String Beans	1/8	150	.50 - .90	75.00	
Lettuce	½	973	.35 - .45	291.90	
Zucchini	¼	0	0	0	
Radish	1/8	9	.33	2.97	
Daikon	1/8	615	.12 - .20	123.00	
Ginger	1/8	240	.50	120.00	
Vendors					
Star Produce					$3,552.00*
Armstrong Produce					2,378.50**
Charley Chow					73.00***
Sub-total				$ 8,349.75	6,003.50
Outstanding Income				6,003.50	
Grand Total				$14,353.25	
Ornamental Plant					
Poinsettia			$4.50	$ 289.25	

* This sum is still outstanding. The college has contacted the firm a number of times but no payment has been received.

** This sum has been greatly reduced. The firm is reputable. No problem is expected.

*** This sum fluctuates depending on shipments. Payments have been received.

MCC MOLOKAI FARM
External Evaluation

This evaluation of the Maui Community College Molokai Agriculture Program was conducted by David W. Curtis, Molokai Farmer; Glenn Teves, HHL/UH agricultural agent; and Daniel Shigeta, County Administrator, College of Tropical Agriculture.

The committee feels that this project is important to assist and promote the development of diversified agriculture on Molokai. Farmers, potential farmers and others, including County and different agency representatives have expressed this feeling also. It is highly recommended that this program be continued.

The staff representative on Molokai, Launnie Ginn, is dedicated, enthusiastic and a very hard worker who has had to overcome many obstacles and problems during the year. Breakdown of equipment, irrigation system, late funding for his two agricultural technicians were some of the major problems causing delays and interfering with meeting the objectives of the program.

It is recommended that the two agriculture technicians and account clerk be employed prior to the start of each curriculum year and not after classes have started. This would permit Launnie Ginn to properly train them and assign major responsibilities for the operations of the farm. He will then be able to supervise and provide overall leadership and planning that is vital to the success of this program. It is felt that with proper organization, leadership and redefined objectives, the program can be greatly improved.

The committee feels that conducting vegetable crops, certified nursery, and fruit production projects simultaneously with the current staffing and fiscal allocations is too ambitious. The vegetable project has been implemented but the nursery and fruit projects were observed to be behind schedule and/or not satisfactory. We recommend that emphasis be placed on vegetable crop production where there is greater student interest and where some success has been achieved. The nursery program objectives should be redefined to limit its scope. The committee noted that for several reasons the grafted fruit trees after successful "takes" died in the containers prior to field plantings. Citrus seedlings are almost ready for bud-grafting. Until other root stock are ready the fruit project will be delayed. We therefore recommend delay of any further development of the certified ornamental plant and fruit/nut tree programs (except on a very small scale) until the farm is on a better operating basis with the irrigation system reworked and funding assured for more than a year-to-year basis.

It is recommended that the number of different vegetable crops be reduced. The educational function can be more effective with 4 crops grown successfully as 12 not so well grown. Proper weed and insect control measures should be taught and practiced by students to reduce the crop losses experienced during the past year. Progress and completion reports should reflect more accurately what was accomplished and the effects or benefits to the community. For some specific examples, please refer to: Molokai Farm Progress Report, page 9, paragraphs b, c, e, g. As another example, Molokai Institute of Ariculture had conducted a lettuce trial of Montello and MESA 659 about 10 months prior to the MCC lettuce trials. MESA was found to be superior and can be grown on Molokai during the winter months.

Since education is the primary objective, it does not appear prudent that income from sales be expected to meet the normal educational costs of the facility. Income from sales should be secondary to education to eliminate pressures of sale quotas above proper planning and teaching of all phases of production. Adequate funding should be provided to cover current costs. Income from sales can be incorporated into the following year's budget.

The proposed farm enterprise course appear to be innovative and viable. Crop selection in this instance will be done by students and we believe the educational support can be provided. However, this program should not dominate the activities of the farm.

David W. Curtis

Daniel T. Shigeta

Glenn Teves